

CONSTRUCTION MANPOWER PLANNING

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INTRODUCTION

I appreciate this opportunity to discuss a subject that has occupied a full 14 months of my life—the design, development, and implementation of the Construction Supervision Manpower Planning System for the Indiana State Highway Commission.

This presentation considers two major points: (1) what manpower planning is and why it is needed and (2) how manpower planning works.

WHAT MANPOWER PLANNING IS AND WHY IT IS NEEDED

By a generally accepted definition, “manpower planning is a process used for determining the size of the work force that will be needed to do the work that will have to be done at a future date.”

The Construction Supervision Manpower Planning System designed for the Indiana State Highway Commission will determine how many people are going to be needed in the districts to properly supervise their annual construction programs.

Why a manpower planning system is needed can be illustrated by the following:

As almost everyone in the highway industry is aware, highway agencies are collectively faced with the continuing problems of spiralling inflation, declining revenues, and increased competition for tax dollars. However, all are still expected to continue with an essential highway improvement program. The winding down of the interstate program did not, as many people suppose, significantly reduce the workload of highway organizations. On the contrary, most states, and especially the State of Indiana, are faced with *increasing, not decreasing*, construction program workloads. This increase in program workload, in light of contrary opinion, means that highway departments are forced to justify their manpower

levels to a higher degree than in the past. A manpower planning system can contribute significantly to this justification.

Another illustration is the need for fair and equitable distribution of manpower resources among the districts. Since construction programs are not constant in each district each year, the districts are faced with fluctuating workloads along with static levels of manpower resources. The manpower planning system identifies this distribution problem in advance so corrective action can be initiated prior to the construction season. The point here is, manpower planning provides the information needs for the commission to *act* instead of just *react* to the problems of manpower distribution to the districts.

From the districts' point of view, manpower planning provides the districts with the opportunity to justify their manpower requests based on an increase of their workloads as identified and documented by the system. This means that if a district's program actually turns out to be larger than forecast, it can be readily identified and justified.

In addition to the above, it must be kept in mind that governmental agencies are continuing to grow in size and complexity. As they do, they must become more aware and proficient in the management aspects of running large public organizations. The times in which we live require a periodic assessment of resource utilization in light of efficiency and cost-effectiveness.

Manpower planning represents a significant step toward improving the management of annual construction programs.

HOW MANPOWER PLANNING WORKS

There have been two basic approaches that have been taken in developing manpower planning systems for highway construction organizations. One is the project approach and the other is the program approach.

The project approach is designed as an operational tool and dictates to the districts how they are to staff individual projects in the field. The program approach is designed as a planning tool and assigns total manpower resources to the districts for their assignment to individual projects. A significant difference between the two is accountability. With the project approach, the system, not the district, is accountable for efficient manpower utilization. With the program approach, each district is accountable for manpower utilization.

The program approach was selected for the Indiana manpower planning system because district accountability was considered vital, and because there are several uncontrollable factors that would be almost impossible to effectively incorporate into a manpower planning system. These factors require engineering and management judgments that can best be made in the field and include: fluctuating contractor work schedules, adverse weather conditions, material delays, strikes, public reactions to construction projects, etc.

The program approach was also selected because it was felt that the wide geographical dispersion of the districts made it impossible for the central office to attempt to manage project staffing on an individual basis as would be required by the project-oriented system.

The program approach also meets Indiana's objectives for a manpower planning program which are to:

- (1) accomplish quality construction with minimum supervision;
- (2) provide the means for simple and accurate forecasting of construction supervision manpower requirements; (3) balance construction manpower allocation to projected program workloads in each district; and (4) monitor the allocation and use of personnel during program implementation.

The manpower planning system developed for Indiana is based on the concept of applying established staffing standards to the districts' annual construction programs. This results in the determination of manpower requirements for each district on a monthly basis. A key to this system is the use of established *staffing standards* for categories of projects. This allows the compensating error of the system to ensure that manpower will be available for those projects that require more than standard manpower by using the excess from those projects that require less than standard manpower. It is this factor that places responsibility for manpower utilization where it belongs . . . in the districts.

The manpower planning system has three key elements: (1) annual construction program, (2) project categories, and (3) staffing standards.

The *annual construction program* consists of all known and anticipated contracts that will be active during the construction season within each district. This program provides the basis for the manpower planning process. The reliability of the planning process is dependent upon the reliability of the program. This program also provides the monitoring capabilities of the system since fluctuations in forecast workloads can be readily identified by additions or deletions in the program for each district.

There are 18 established *project categories* in the manpower planning system. These categories, being fairly broad in scope, permit a wide variety of individual project types to be reduced in number to a more manageable and limited grouping for the assignment of manpower staffing standards.

Staffing standards have been established for each project category based on a "standard" or average project that falls within each category. These staffing standards were developed and established with the participation of experienced engineers from the field.

The end result of the application of annual construction programs to established categories and staffing standards is a monthly determination of each district's manpower requirements.

CLOSURE

In closing, I would like to point out that manpower planning should not be considered a negative reaction to the way Indiana has managed its construction function in the past. On the contrary, Indiana has traditionally maintained high levels of service in the construction of its highway system and has staffed the construction function in a normally accepted manner. This is reflected in the comparatively low construction engineering rate of 7.8%. This is significant because each per cent represents approximately 1.9 million dollars in operating costs. This is a clear indication that Indiana is doing something right—manpower planning will help to ensure that Indiana will remain an industry leader in the future.